Comparison of Commercially-Available Fiberoptic High-Speed Handpieces Evaluated by the Dental Evaluation and Consultation Service (DECS) (Project 08-012) (11/08)

A dependable and efficient high-speed handpiece is required to provide consistent and quality dentistry. Technology continues to improve to increase handpiece performance and longevity. DECS frequently receives inquiries as to which high-speed handpiece to purchase. As technology has improved, performance of most handpieces has also improved, so much of that decision will hinge on provider preference; however, there are still certain design and performance criteria that need to be considered in handpiece selection.

DECS has tested 19 high-speed handpieces since 1996. Eight parameters related to clinical performance were evaluated. Longevity, power, fiberoptic transmission, eccentricity, noise level, and adequacy of the chucking mechanism were determined at baseline and at subsequent 250 simulated clinical use intervals until the test handpieces either failed or reached 1,000 uses. Static parameters including handpiece visibility angle and interocclusal clearance were determined at baseline (new handpieces) only.

In order to clarify and organize the data obtained from over 10 years of handpiece evaluations at DECS, a summary table (see below) is provided that compares the performance of each handpiece model evaluated in these eight different areas. Each model was rated either (+) positive, (0) neutral, or (-) negative for each area. DECS assigned levels of importance for each performance parameter. This relative weighting is listed in the table below the category name and enclosed in brackets [ ]. The (+), (-), and (0) were compiled for each handpiece model and the cumulative total used to rank overall performance. Four of the handpieces tested are no longer available (annotated by a **), and have been replaced by subsequent models.

Group [Year Evaluated]	Longevity [3]*	Fiber Optics [2]	Power [1]	Noise [1]	Eccentricity [1]	Chuck [1]	Visibility Angle [0.5]	Access [0.5]	Total Score
KaVo GENTLEforce 600B (2003)	+	+	+	+	+	+	+	+	+10.0
KaVo 635B (1998)	+	+	0	+	+	+	+	+	+9.0
Ti-Max NL 9000S (2007)	+	+	+	+	+	0	+	+	+9.0
KaVo 643B (1998)	+	+	0	+	+	+	0	0	+8.0
KaVo 647B (1998)	+	+	+	+	+	+	-	-	+8.0
Star 430 SWL (1996)	+	+	0	+	+	+	0	0	+8.0
Midwest Stylus EasyCare (2003)	+	+	0	+	+	0	+	+	+8.0
W&H Synea TA-98L (1999)	+	+	+	+	+	0	-	0	+7.5
W&H Synea TA-96L (1999)	+	+	0	+	+	0	+	0	+7.5
KaVo 640B** (1996)	+	+	+	0	+	+	-	0	+7.5
Midwest Stylus Lubed (2003)	+	+	0	+	0	+	+	+	+8.0
Midwest XGT (1999)	+	0	0	+	+	+	+	+	+7.0
KaVo 642B** (1996)	+	+	-	0	+	+	+	+	+7.0
Midwest Quiet-Air (1996)	+	+	0	-	0	+	0	-	+4.5
W&H 898** (1996)	+	-	+	+	+	+	-	-	+4.0
W&H 896** (1996)	+	-	-	+	+	+	+	-	+3.0
Midwest Tradition (1996)	0	-	0	-	0	+	0	0	-2.0
Lares 757 (1996)	-	+	+	-	0	-	-	+	-2.0
Lares 557 (1996)	-	-	0	0	0	-	+	+	-5.0

* Level of importance for each parameter is listed in parenthesis ** Replaced by updated model